## Improved Aerodynamics

### A Glance at Clean Freight Strategies

<table>
<thead>
<tr>
<th>ENERGY &amp; FUEL SAVINGS</th>
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</thead>
<tbody>
<tr>
<td><strong>Aerodynamic Long Haul Combination Truck</strong></td>
<td></td>
</tr>
<tr>
<td>Gallons saved:</td>
<td><strong>1,650 gallons</strong></td>
</tr>
<tr>
<td>CO2 savings:</td>
<td><strong>16.8 metric tons</strong></td>
</tr>
<tr>
<td>Fuel Economy Increase:</td>
<td><strong>11%</strong></td>
</tr>
<tr>
<td>MPG (original 6 mpg):</td>
<td><strong>6.6 mpg</strong></td>
</tr>
<tr>
<td>Fuel Cost Savings:</td>
<td><strong>$4,810</strong></td>
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**Using a streamlined-profile tractor with aerodynamic devices can improve fuel economy by over 3 percent and will reduce fuel costs by over $1,500. When adding an aerodynamic trailer, you can get up to an 11 percent increase in fuel economy, saving 16 metric tons of carbon dioxide.**

### WHAT IS THE CHALLENGE?

Aerodynamic drag (wind resistance) accounts for most truck energy losses at highway speeds. Reducing drag improves fuel efficiency. The longer the drive and the higher the speed, the greater the potential efficiency benefits become. Manufacturers have made significant progress over the past two decades in reducing the drag coefficient (a measure of wind resistance) of a typical freight truck from about 0.8 to about 0.65 – an improvement of nearly **20 percent**. Additional efforts to improve aerodynamics could result in a further **25 percent** reduction in the drag. This could have a significant impact on fuel economy. For example, cutting drag by **20 percent** could boost fuel economy up to **15 percent** at highway speed.

### WHAT IS THE SOLUTION?

A number of options exist to improve aerodynamics and improve fuel efficiency.

#### Tractor Aerodynamics

Truck tractor aerodynamic options:

- **Roof fairings** (an integrated air deflector mounted on the top of the cab)
- **Side extender fairings** (to reduce the gap between the tractor and the trailer)
- **Side tank fairings**
- **Aerodynamic front bumper** (to reduce air flow beneath the truck)
- **Aerodynamic mirrors**

Truck manufacturers offer aerodynamic models that include a streamlined front profile, sloped hood, and a full package of add-on devices. Selecting these features for a typical tractor model can improve fuel economy by over **3 percent**. However, when improving a classic combination truck with no aerodynamic features, one can see up to a **15 percent** increase in fuel economy.

#### Trailer Aerodynamics

Truck trailer aerodynamic options:

- **Gap Reducer** (these devices affix to the front of the trailer to minimize the gap between the tractor and trailer, minimizing air turbulence in turn)
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ENERGY & FUEL SAVINGS

Aerodynamic Tractor
Annual Savings

Fuel Economy Increase: 3.6%

MPG (original 6 mpg): 6.2 mpg

Fuel Cost Savings: $1,690

Single Unit Truck
Annual Savings

Gallons saved: 75

CO2 savings: 0.8 metric tons

Fuel Economy Increase: 5%

MPG (original 8.54 mpg): 8.97 mpg

Fuel Cost Savings: $285

ENERGY & FUEL SAVINGS

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Next Steps

1. Trucking firms can specify aerodynamic options when purchasing a new truck and consider adding aerodynamic devices to existing trucks and trailers. Some aerodynamic options are standard on many trucks, like a streamlined hood. Others can be purchased and installed for an additional cost.

2. For more information on aerodynamic devices, contact your local truck dealer, truck equipment vendor, or trucking association.

Please visit the SmartWay website at www.epa.gov/smartway to access more tech bulletins.